



# The lower respiratory tract

## The lungs

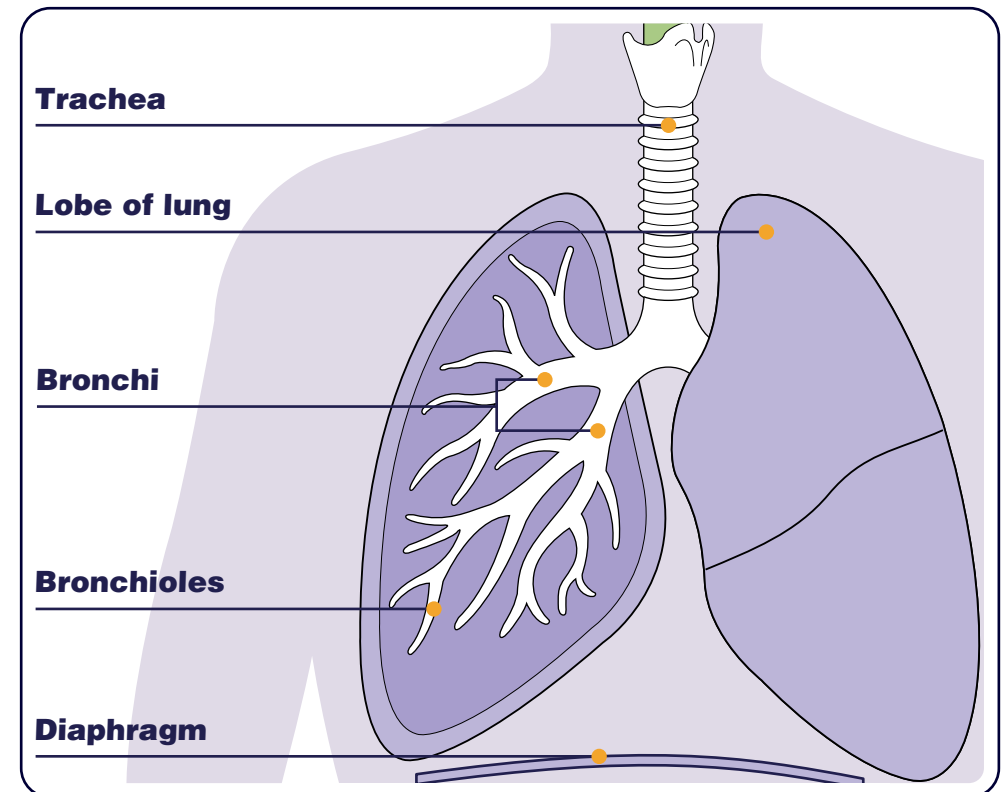
The lungs are cone-shaped and sponge-like. The right lung is split into three lobes, while the left lung is smaller and split into two lobes. Each lobe has its own airways and blood vessels. The lungs lie within the ribcage, at the base of which is a large sheet of muscle called the diaphragm. The diaphragm, along with the intercostal muscles (which lie between the ribs), is responsible for the routine movements of breathing.

## Bronchi

The trachea divides into two bronchi (each one is called a bronchus), which in turn divide to form smaller bronchi within each lung. Cartilage plates and rings keep the bronchi open during respiration. The bronchi branch again to form tertiary bronchi before branching into smaller airways called the bronchioles.

## Bronchioles

The diameter of the enclosed space, or lumen, of the airway gets smaller and smaller with each branch, but the total surface area increases. As the airways divide and get smaller, spirals of smooth muscle replace the cartilage.





# The alveoli

The smallest bronchioles subdivide into alveolar ducts, which open out into the alveoli, which are the site of gaseous exchange. Each lung contains between 150 and 400 million alveoli, which provide a massive surface area for diffusion of gases – around 70–80m<sup>2</sup>, the size of a tennis court.

Alveolar membranes are very thin, just a single cell thick, and are in close contact with fine blood vessels to allow rapid transfer of gases between the alveoli and the blood. Alveolar walls also contain elastic fibres called elastin that allow them to stretch during inspiration and recoil rapidly during expiration to expel air efficiently without effort.

Alveoli are grouped together to form alveolar sacs. Together with the alveolar duct that leads to it, the alveolar sac and its contents are known as an acinus.

